

### **REMARKS**

Claims 1 and 2 were in the application as originally filed. Claims 3 through 41 had been previously added. Claim 2 has been deleted. Claims 1 and 3 - 41 are currently being prosecuted in the application. Claim 1, 20, 40, and 41 have been amended to specify a specific heating sequence.

### **NONSTATUTORY OBVIOUSNESS-TYPE**

#### **DOUBLE PATENTING REJECTIONS**

Claims 40-41 are provisionally rejected on the ground of obviousness type double patenting over co-pending commonly owned US Application 10/775,848. Applicant will be willing to file a Terminal Disclaimer to take effect in the event that 10/775,848 issues as a patent.

Claims 1 and 3, 4, 7, 10, 13-15, 20-22, 25, 26, 28, 29 and 32-35 were provisionally rejected on nonstatutory obviousness-type double patenting over Claims 1, 3 and 4 of co-pending US Application 10/775,848 in view of Kodas et al, and either Grundy 4,859,241 or Kydd 6,036,889. The above mentioned terminal disclaimer, when it is filed, will avoid this obviousness double patenting rejection.

### **REJECTIONS UNDER 35 USC 102(a) or 103(a)**

Claim 40 is rejected as anticipated under 102(b) by DE 19846096. DE '096 discloses a method of preparing a suspension of ternary oxide for pressure inks. Specifically DE '096 teaches a preparation containing a ternary oxide and a median particle size of 1-50 nm, at least one dispersing agent, with a median molecular weight of greater than 1000g/Mol and a solvent. The oxide has the formula ABX where A is selected from Sn, In and Zn and B is Sb, Sn, F, P, Al, Cd are dopants. X represents oxygen or S, Se or Te. DE '096 is cited as disclosing a method of making structured, electrically conductive areas on substrates. It is clear, however, the DE '096 does not disclose the specific coating composition used by applicant, or coating the functional material with fatty acid, although it does mention polyvinylpyrrolidone, as a dispersant for the functional materials. DE '096 further does not disclose the preferred firing

sequence taught by applicant and now in the amendment to claim 1, 20, 40 and 41, i.e. "using a 3 hour heating profile with a 10 min. peak at 380 degrees C.

Claims 40-41 are also rejected under 35 USC 103(a) as obvious over Kodas et al (2003/0148024) in view of Bishop 5,744,245. Kodas is cited as teaching a method for making conductive features on a glass substrate. Bishop is cited as teaching use of a polyvinyl pyrrolidone as a preferred resin. The Examiner asserts that Kodas does not limit the type of polymer that can be used and that Kodas does teach modification of a surface with a surfactant but does not teach coating functional particles with fatty acid.

Applicant acknowledges that Bishop '245 does teach use of polyvinyl pyrrolidone as an additive in a composition that also contains metal. However, applicant argue4s that Bishop is in an entirely different technical field of art (e.g. decoration of glass surfaces with metals). It would be highly unlikely that one skilled in the electrical arts and in the field of devising coatings for substrates in the electrical field would be motivated to combine Kodas with Bishop (involving a coatings for the arts and crafts glass and ceramic decorative field) to combine Bishop and Kodas to arrive at the present invention. The fields of art are completely different and the environments that such coatings are designed to withstand are different. Further the combination of Kodas and Bishop do not disclose the claims as currently amended.

Claim 41 is further rejected as obvious over DE19846096 in view of Kodas. Kodas is cited again for his teaching modification of a surface by using a surfactant but not teaching the coating of functional compositions with fatty acid. The Examiner asserts that it would have been obvious to have modified the method of DE '096 for making structured, electrically conductive areas on a substrate by providing the surface of the substrate with treatment by surface energy patterning or by modifying of its surface tension with a surfactant as taught by Kodas et al. The differences between DE 19846096 and the present claims were discussed above and apply here. Kodas uses a surfactant but does not teach the use of fatty acid coating the functional materials or the

polyvinylpyrrolidone polymer used for dispersing the functional material in solvent.

Claims 1 and 3-39 were rejected as obvious over Kudas et al., in view of Bishop US 5,744,245 and either Grundy 4,859,241 or Kydd 6,036,889.

Kudas et al. 2003/0148024 is cited again as disclosing a method of making conductive electronic features. Kudas discloses that one or more polymers may be thermoplastic or thermoset but does not teach use of polyvinyl pyrrolidone. Also, Kudas et al. does not teach coating spherical particles with a fatty acid. Thus, the present claims 1 and 3-39 are different from Kudas et al. Bishop teaches a composition useful for decorating ceramic or glass for use in the decorative arts. As discussed above, Bishop is in a different field from applicant. Grundy is cited as teaching a silver powder filled paste and teaches that consistent paste performance can be achieved by coating the silver powder with a surfactant such as silver stearate.

Grundy claims Silver flake having an organo-silver surfactant thereon, said surfactant being insoluble in 2,2,4-trimethyl-1,3-pentane diol-monoisobutyrate. Kydd claims "A conductive thick film composition comprising a mixture of: a metallo-organic decomposition (MOD) compound; a first metal powder with a particle thickness of about 1.mu. in an amount of about 1 to about 10 times the amount of the MOD compound by weight; and, an organic liquid vehicle in an amount of about 0.4 to 1.5 times the MOD compound by weight." Kydd provides an ink made up of metallo-organic decomposition compound and one or more metal powders, which can be bonded to polymer based circuit board substrates at temperatures below 350 degrees C. Neither Grundy nor Kydd combined with Kudas provide the exact limitations of the claims as currently amended.

Applicant notes that Claims 1 and 20 have been amended to recite "**and wherein the functional material is coated with a fatty acid**". Kudas et al does not describe functional materials coated with a fatty acid. Kudas does disclose use of surfactants to maintain suspension but does not disclose providing

spherical particles coated with fatty acid. Claims 1 and 40 and 41 have been amended to include a firing procedure.

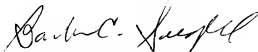
To summarize, Claims 1, 3-6, 10-12 and 16 are rejected under 35 USC 103 as unpatentable over Bishop 5,744,245 in view of Kodas 3003/0148024. As noted above, Kodas does use surfactants to maintain suspension but does not coat spherical particles with fatty acid. Kodas also teaches metal precursors for forming conductive features but does not teach the particular heating procedures taught herein. Applicant respectfully disagrees that Claims 1, 3-6, 10-12, and 16 are obvious over Bishop 5,744,245 in view of Kodas et al 2003/0148024. As noted above, the present claims differ from those of Kodas. Bishop teaches use of a polyvinylpyrrolidone in a metal compound for coating glass or ceramic in the decorative arts. This art is in an entirely different field from applicants'. As argued above, there would be no motivation to combine the Kodas and Bishop teachings to arrive at the present invention.

Thus, applicant argues that all his claims, as currently amended, are neither anticipated nor obvious over the references cited.

In view of the amendments made above and the discussions advanced above, and arguments advanced, allowance of claims 1 and 3 to 41 is respectfully requested.

If anything else is needed to advance prosecution of this application, the Examiner is requested to contact applicant's attorney at the telephone number below.

Respectfully submitted,



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Dated: September 8th, 2008